



DAYLIGHT

ORIGINS SCIENCE FOR CATHOLICS

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NO 71

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Corals —sessile animals once thought to be plants

Corals are colonial marine invertebrates included in the Class Anthozoa, Phylum Cnidaria [Coelenterates]. Most corals contain symbiotic coloured unicellular algae; as they also lacked locomotion, some early Greeks thought they were plants. Mucus secretions trap organic matter that stimulates cilia to move food into their mouths. Their feeding polyps resemble small sea anemones but they secrete elaborate exoskeletons of calcium salts and the ‘hard corals’ form massive physical structures such as the Great Barrier Reef harbouring very rich ecosystems. Gamete production at ‘spawning’ can be influenced by day length and the lunar cycle. Over 2000 species of coral have been identified. Their classification is: “challenging as hypotheses based on morphological traits contradict hypotheses formed via molecular tree-based processes.” No surprise!

<https://en.wikipedia.org/wiki/Coral>

Picture: www.stockphotossecrets.com



Patrons

The Immaculate Conception

St Thomas Aquinas

St Oliver Plunkett (for Ireland)

St Michael

St Bonaventure

Honorary Member

Professor Maciej Giertych, BA, MA (Oxon), PhD, DSc

AIMS

To inform Catholics and others of the scientific evidence supporting Special Creation as opposed to Evolution, and to show that the true discoveries of Science are in conformity with Catholic doctrines on Origins.

ACTIVITIES

Daylight Origins Society is a non-profit educational organisation funded from subscriptions, donations and sales of publications.

- ❖ Publishes the periodical *Daylight* for subscribers in 20 countries.
- ❖ Currently online at www.kolbecenter.org/daylight-magazine/
- ❖ Runs online page at www.facebook.com/DaylightOriginsSociety
- ❖ Publishes and distributes pamphlets on Origins issues.
- ❖ Provides mail-order service for literature and audio-visual material.
- ❖ Promotes links with other Catholic Origins groups worldwide

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[Note that existing subscriptions still in credit will continue to receive copies.]

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EDITORIAL

British Hierarchy opposes ‘assisted dying’ legislation

On Friday November 29th 2024, a Second Reading of the Terminally Ill Adults (End of Life) Bill was passed in the House of Commons by 330 in favour and 275 against. Similar legislation was previously defeated in 2015. If this eventually becomes law, ‘assisted dying’ will be legal in England and Wales. A few weeks ahead of the vote, Catholic Bishops in England, Wales and Scotland urged us to write to our MPs, and many issued pastoral letters on assisted suicide. These quotations from the Archbishop of Westminster’s letter clearly link the moral argument against euthanasia to our beliefs about mankind and our origins: “... made in the image and likeness of God.”

The questions raised by this bill go to the very heart of how we understand ourselves, our lives, our humanity. For people of faith in God – the vast majority of the population of the world – the first truth is that life, ultimately, is a gift of the Creator. Our life flows from God and will find its fulfilment in God. ‘The Lord gave, and the Lord has taken away; blessed be the name of the Lord.’ (Job 1:21) To ignore or deny this truth is to separate our humanity from its origins and purpose. We are left, floating free, detached, in a sphere that lacks firm anchors or destiny, thinking that we can create these for ourselves according to the mood of the age, or even of the day.

The clearest expression of this faith is that every human being is made in the image and likeness of God. That is the source of our dignity and it is unique to the human person. The suffering of a human being is not meaningless. It does not destroy that dignity. It is an intrinsic part of our human journey, a journey embraced by the Eternal Word of God, Christ Jesus himself. He brings our humanity to its full glory precisely through the gateway of suffering and death.¹

It is now *30 years* since I first wrote to the Bishops in Britain to inform them of the errors and dangers of evolutionary philosophies, and of some of the Catholic publications available on the subject. Further letters and literature were sent in 2005, and in 2017, at some expense, they received copies of Prof. Giertych's book *Evolution, Devolution, Science*, including a letter from him endorsing *Daylight* and our own communications.² Of course, our sentiments on these matters echo the grave warnings of Pope St Pius X and Pope Pius XII.

In these passages from his 1999 book, the late Gerard Keane emphasises the clear connection between euthanasia and the falsehoods of Secular Humanism:

Once the Creator is banished from the ordering of society, the prospects for genuine peace and prosperity in a post-Christian world become illusory. And in their place come chaos and hardship, as society drifts further into a culture of death, a state not unlike the "kill or be killed" mentality.

There can be no doubt that the moral standards of society have been affected by Evolution-inspired Secular-Humanist attitudes. The most obvious influence of this is seen in the widespread growth of abortion on demand, but euthanasia is another issue now strongly promoted by many Secular Humanists. Their key strategy has been to change the laws of society and thereby also to influence moral standards by changing the public perception of normal moral behaviour.³ [...]

One has only to reflect upon the eugenics ideology at work behind population control tactics to see just how far man-centred Humanism has moved from Christian beliefs. Acceptance of atheistic beliefs concerning the evolutionary origin of mankind has for decades helped shape the self-centred attitudes of many in society who are either indifferent to the killing of unborn human beings or quite hostile to pro-life beliefs. But for many militant activists the goal has gone well beyond that of achieving abortion on demand; they believe that population growth must be controlled as though it were a disease, as though it constituted an environmental threat to life on Earth. The anti-human spectre of "helping" the process of evolution by weeding out the "weak and unfit" in society through abortion, genetic manipulation and euthanasia is likely to increase in intensity as

¹ Extract from the Pastoral Letter of Cardinal Vincent Nichols (Oct 2024)

² See *Daylight* #10, #19, #20, #37 and #57.

³ Keane, G.J., *Creation Rediscovered* (1999), TAN Books, 2nd Edn., p.292.

the age of the elderly continues to increase and birth replacement rates continue to stagnate.

The antidote for man-centred Humanism lies in the rediscovery of God the Creator/Redeemer and the consequent renewed understanding of the reality of Original Sin.⁴

We applaud Cardinal Nichols for his support on this issue but suggest that many who reject our foundational belief that ‘man is made in the image of God’ have fallen for the lie of Evolution and do not believe in God or the Bible anyway. This could be a good time for *Daylight* readers to contact their Bishops on the need to base their arguments on sound science and philosophy, with renewed emphasis on the traditional doctrines of Creation and the Fall.

Update on Daylight

We apologise again for the long delay since our last issue, though progress has since been made. We are very grateful to Hugh Owen and his skilled team at the Kolbe Center who have spent many hours in setting up PDF files of all past *Daylight* issues (#1 to #70) so they can be read on line. Please see inside the back cover for more details. Subscriptions will now only be needed for printed copies, and further issues should be available on the Kolbe Center website.

WARNING! Please be aware that our previous .com site at ‘daylightorigins’ has unfortunately been hi-jacked by an anonymous being! None of the material now on this website has any valid connection with our magazine. No names are given for contact but just the address of “St Albans, England.” I suppose it is a back-handed compliment for someone to feel sufficiently threatened by our website to take the time and trouble to make a bogus copy! It does actually include a very complimentary description of *Daylight* magazine!

We still maintain a ‘Facebook’ page, currently with 867 ‘likes’, at www.facebook.com/DaylightOriginsSociety

FAITH Magazine

Many readers will be aware of our critical position on those aspects of the ‘FAITH Movement’ in England that claim a ‘New Synthesis’ of Faith and Science but are based on unproven evolutionary assumptions. They used to publish a magazine but it appears this closed down in 2022. Back numbers from 2016 can be read on their website at www.faith.org.uk. Some other past publications can be downloaded, but no current issue is available to date. *Ed.*

⁴ Ibid, p. 295. We now also face ‘climate change’ being used as an argument for eugenics. *Ed.*

The Uniqueness of Man

Anthony Nevard

Most of us have at some time known a pair of identical twins. They were of necessity the same sex, but yet had developed small differences that helped one in distinguishing them. Fraternal twins are commoner, may be of different sexes, and bear typical sibling resemblances.¹ We often note physical, or even personality, family traits between parents, children, cousins etc. even across age groups. And we recognize the common human features of people who differ even more from us in their external physical features, language, cultural and other factors. We broadly agree on the basic human rights which we share, and the duties and responsibilities that these imply for us all. In the Judeo-Christian tradition, mankind originated from a single pair of human ancestors, Adam and Eve, created body and soul by God, as recounted in Genesis.



Romulus and Remus –
legendary twin brothers and
founders of Rome.

www.stockphotosecrets.com

The Variety and Unity of Mankind

Charles Darwin had a very different idea of our origins. Following his arguments for the ‘struggle for existence’ and the ancestral interconnections of organic life he had applied to the natural world, as expounded in the *Origin of Species* (1859), he applied them to the origin of humans in his book *The Descent of Man* (1871):

The main conclusion arrived at in this work, namely that man is descended from some lowly organized form, will, I regret to think, be highly distasteful to many. But there can hardly be a doubt that we are descended from barbarians. The astonishment which I felt on first seeing a party of Fuegians on a wild and broken shore will never be forgotten by me, for the reflection at once rushed into my mind—such were our ancestors.²

¹ The writer recently happened to find the book *Life and Labour* (1907) by Samuel Smiles including a fascinating chapter entitled: ‘Lineage of Talent and Genius’ (pp 186-239). It may be accessed on line in various formats at <https://archive.org/details/lifeandlabour035203mbp>

² Darwin, C., *The Descent of Man* (2nd Edn. 1874), John Murray (1922), p. 946.

He paints a vivid word-picture of these people's wild appearance and activities and claims "For my own part I would as soon be descended from that heroic little monkey ... or from that old baboon..." We read in Darwin's *Journal of Researches* (1843) that when the *Beagle* visited Tierra del Fuego in 1832, he

could not have believed how wide was the difference between savage and civilized man; it is greater than that between a wild and domesticated animal, inasmuch as in man there is a greater power of improvement.³

However, when they landed and met with another group of people, Darwin found that "these Fuegians are a very different race from the stunted, miserable wretches farther westward." He then tells an interesting tale which recounts the increased development of communication between the voyagers and the reactions of the native



HMS Beagle by Conrad Martens
[Public domain]

Fuegians, their excellent talent for mimicry, and superior acuity of distant vision. During his former voyage in 1826-1830, Captain Fitzroy had taken on a party of natives, some of whom he took to England intending to educate them and instruct them in religion. Three of them were being returned to their homeland, having learned to "speak and understand a good deal of English."⁴

Following the Creation of Adam, we read in Genesis:

And the Lord God said: it is not good for man to be alone; let us make him a help like unto himself [...] And Adam called all the beasts by their names, and all the fowls of the air, and all the cattle of the field: but for Adam there was not found a helper like himself. (Gen. 2:18,20)

When God brought Eve to Adam, he recognized a fellow human who was "bone of my bones, and flesh of my flesh." Darwin, despite his somewhat emotional sense of shock at the sight of the 'natives', also clearly recognized them as *human beings*, who could communicate

³ Darwin, C., *Journal of Researches* (3rd Edn.), Ward, Lock & Co., (1889), p. 148

⁴ Ibid., p. 150.

in a friendly way and learn to communicate in English. The boy, Jemmy Button, “was a universal favourite,” and Darwin remarks:

It seems yet wonderful to me, when I think over all his many good qualities, that he should have been of the same race, and doubtless partaken of the same character, with the miserable, degraded savages whom we first met here. ⁵

The young girl, Fuegia Basket, was “nice, modest, reserved...” and:

very quick in learning anything, especially languages. This she showed in picking up some Portuguese and Spanish, when left on shore for only a short time at Rio de Janiero and Monte Video, and in her knowledge of English. ⁶

Darwin, like Adam, recognized in practice the unique nature of human beings, but in theorizing on their origin he discussed in depth the contentious nineteenth-century issue of whether the races should be regarded as separate species.

Man has been studied more carefully than any other animal, and yet there is the greatest possible diversity amongst capable judges whether he should be classed as a single species or race, or as two (Virey), as three (Jacquinot), as four (Kant), five (Blumenbach), six (Buffon), seven (Hunter), eight (Agassiz), eleven (Pickering), fifteen (Bory St. Vincent), sixteen (Desmoulins), twenty-two (Morton), sixty (Crawfurd), or as sixty-tree, according to Burke. ⁷

Anthropologists of the day were divided into monogenists and polygenists, according to their views on human origins. Darwin explains the implications of these different positions:

Those who do not admit the principle of evolution, must look at species as separate creations, or as in some manner as distinct entities; and they must decide what forms of man they will consider as species by the analogy of the method commonly pursued in ranking other organic beings as species. But it is a hopeless endeavour to decide this point, until some definition of the term “species” is generally accepted; and the definition must not include an indeterminate element such as an act of creation. ⁸

⁵ Darwin, op. cit. p.150

⁶ Darwin, op. cit. p.150

⁷ *Descent of Man*, p. 270

⁸ *Ibid.*, p. 271

We note in passing that in Darwin's earlier work he had claimed to propose 'the origin of species', yet ten years later there was still no agreement about what a species was! But of course 'creation' must be automatically disqualified from consideration. He continues,

Those naturalists, on the other hand, who admit the principle of evolution, and this is now admitted by the majority of rising men, will feel no doubt that all the races of man are descended from a single primitive stock.; whether or not they may think fit to designate the races as distinct species, for the sake of expressing their amount of difference.”⁹

Naturally, Darwin counted himself among these 'rising men' and proposed the strong evidence of the commonality of our features:

Although the existing races of men differ in many respects, as in colour, hair, shape of skull, proportions of the body, &c., yet if their whole structure be taken into consideration they are found to resemble each other closely in a multitude of points. [...] It is extremely improbable that they should have been independently acquired by aboriginally distinct species or races. [...] I was incessantly struck, whilst living with the Fuegians on board the “Beagle,” with the many little traits of character, shewing how similar their minds were to ours.¹⁰

He was also “deeply impressed” with reports of the close similarity between the men of all races in “dancing, rude music, acting, painting, tattooing,” as well as their mutual comprehension of gesture-language, facial expressions and emotional cries. Archaeologists have observed great similarity across the world in the forms of stone arrow-heads, ornamental patterns (e.g. zig-zags), and the construction of stone piles as record of events or to mark deaths and burials.

Now when naturalists observe a close agreement in numerous small details of habits, tastes, and dispositions between two or more domestic races, or between nearly-allied natural forms, they use this fact as an argument that they are descended from a common progenitor who was thus endowed; and consequently that all should be classed under the same species. The same argument may be applied with much force to the races of man.

⁹ Ibid., p. 273

¹⁰ Ibid., p. 276

As it is improbable that the numerous and unimportant points of resemblance between the several races of man in bodily structure and mental faculties (I do not here refer to similar customs) should all have been independently acquired, they must have been inherited from progenitors who had these same characteristics.¹¹

After some discussion on the dispersion of early man and his acquisition of language, the use of fire, making weapons and canoes, Darwin concludes:

Whether primeval man, when he possessed but few arts, and those of the rudest kind, and when the power of language was extremely imperfect, would have deserved to be called man, must depend on the definition which we employ. In a series of forms graduating insensibly from some ape-like creature to man as he now exists, it would be impossible to fix on any definite point when the term “man” ought to be used. But this is a matter of little importance. So again, it is almost a matter of indifference whether the so-called races of man are thus designated, or are ranked as species or sub-species; but the latter term appears the more appropriate.¹²

But surely this is *the* ‘bone of contention’ – how a *human* can evolve from an *animal* – but Darwin says it’s not important! *Really?* In accounting for how races arose, and drawing again from examples from animal domestication (horses), Darwin concludes:

The new sub-breeds in such cases are not descended from any single pair, but from many individuals which have varied in different degrees, but in the same general manner; and we may conclude that the races of man have been similarly produced, the modifications being either the direct result of exposure to different conditions, or the indirect result of some form of selection.¹³

After a further long discussion about the causes of racial extinction, fertility, disease, skin and hair colour, bodily features and proportions, Darwin makes a remarkable admission:

We have now seen that the external characteristic differences between the races of man cannot be accounted for in a satisfactory manner by the

¹¹ Ibid., p. 278

¹² Ibid., pp. 279-280

¹³ Ibid., p. 281

direct action of the conditions of life, nor by the effects of the continued use of parts, nor through the principle of correlation.¹⁴

In the attempt to apply natural selection to the problem, he admits that it appears that “none of the differences between the races of man are of any direct or special service to him,” and so the argument of increasing fitness cannot be used. Admitting “we have thus far been baffled in all our attempts to account for the differences between the races of man,” Darwin finally calls on the agency of ‘sexual selection.’ This covers the subject across the animal kingdom and occupies about two-thirds of the whole book. This was basically the idea that males were in competition with each other for sexual partners, and females chose the most suitable males for breeding.

This was itself an issue of contention, both on biological and sociological grounds. How could small differences in secondary sexual characteristics be selected for over time and develop into, e.g.



the magnificent tail of a peacock? Do animals have an aesthetic sense? Was this a scientific justification for male aggression and dominance? Or for female passivity? There were also overtones in respect of some national and racial attitudes.

We cannot get into the details here, but ‘sexual selection’ failed to convince many other naturalists at the time. For example Wallace’s withering response to the argument that male butterflies’ brilliant wing colours and patterns had been selected by the females:

This view has always seemed to me to be unsupported by evidence, while it is also quite inadequate to account for the facts. The only direct evidence, as set forth with his usual fairness by Mr Darwin himself, is opposed to his views.¹⁵

Reflecting a common opinion at the time, William Jennings Bryan, the American politician, said in his closing statement at the Scopes Trial in Dayton, Tennessee (1925):

¹⁴ Ibid., p. 307

¹⁵ Wallace, A. R., *Darwinism* (2nd Edn.) Macmillan & Co., (1897), p. 274.

Darwin suggested two laws, sexual selection and natural selection. Sexual selection has been laughed out of the classroom and natural selection is being abandoned, and no new explanation is satisfactory even to scientists.¹⁶

Ornithologist, and former evolutionist, Douglas Dewar was co-founder, with Sir Ambrose Fleming, in 1932 of the Evolution Protest Movement (now the Creation Science Movement). He wrote:

Darwin, in order to make his theory of descent more plausible, sought to minimize the differences between man and the lower animals; his *Descent of Man* is a fine piece of special pleading, but very defective as a scientific work.¹⁷

Man's Place in the Bible and Nature

The creation account in Genesis describes the animal world as including 'the great whales,' 'the fishes of the sea,' 'the winged fowls [birds] of the air,' 'the living creature in its kind,' 'cattle and creeping things' and 'beasts of the earth.' Man, however, was created "to his own image; to the image of God he created him. Male and female he created them." (Gen. 1: 20-29) From the very beginning, the Scriptures affirm the uniqueness of man on Earth.

The first creatures to be referred to after the Fall were Abel's sheep ['shepherd', 'flock']. Prior to the Deluge, the categories of animals that Noe was to take on the Ark (i.e. "everything that moveth upon the earth ... and all that fly" (Gen. 7:14) are the same as those used in Genesis 1.¹⁸ However, we here meet a new distinction – between 'clean' and 'unclean' animals (Gen. 7:3), which is explained after the Ark has landed when Noe, "taking of all cattle and fowls that were clean, offered holocausts upon the altar." (Gen. 8:20) The details of the 'clean' animals that might be eaten or offered in sacrifice were given to Moses, where we also understand to distinguish: "whatsoever hath the hoof divided, and cheweth the cud." (Lev. 11)

In later centuries, there were doubtless many naturalists of their

¹⁶ Quoted in Glick, T.F., *What about Darwin?*, Johns Hopkins University (2010) p. 37

¹⁷ Dewar, D., *Man: A Special Creation*, Evolution Protest Movement (1975), p. 3

¹⁸ The fishes and 'great whales,' as denizens of the seas, were not, of course, taken on the Ark. [Biblical references here from the Douai-Rheims Catholic Bible.]

day who sought to categorise the animal world they encountered in their various civilizations, but their works have perished over the ages. The most ancient to which we have access is that of the Greek Aristotle (384-322 BC), a pupil of the philosopher Plato. His observational studies feature over 500 animal species, and his precepts, though not above criticism from modern thought, helped to shape the course of science. Julia Brittain writes in *The Great Naturalists* (2007) that Aristotle's categories of animals included:

...blooded or bloodless (roughly corresponding to vertebrates and invertebrate), viviparous or oviparous (bearing live young or producing young by laying eggs), and solid-hoofed or cloven-hoofed, all still important today.¹⁹

Aristotle's writings were still appreciated even in Victorian times:

Aristotle's work certainly found favour with Charles Darwin, who described him as one of the greatest observers that ever lived.

She adds that after he had received Aristotle's *De Partibus Animalium* from a friend William Ogle in 1882, Darwin replied:

I had a high notion of Aristotle's merits, but I had not the most remote notion what a wonderful man he was. Linnaeus and Cuvier have been my two gods, though in very different ways, but they were mere school-boys to old Aristotle.

It would be some 2000 years before the Swedish genius Linnaeus would establish the classification system in *Systema Naturae* (1735) that we use today. Based on this method, Man is classified thus:

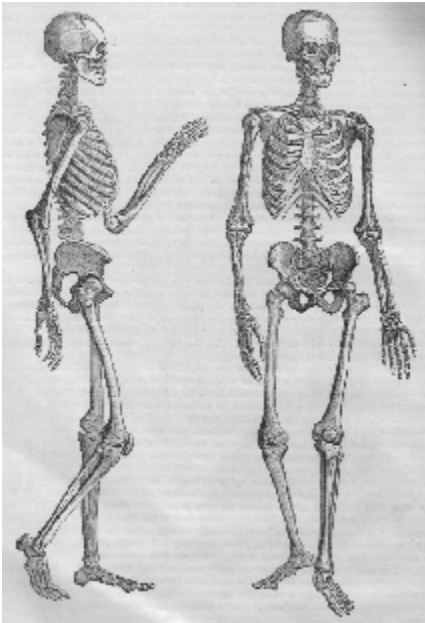
Kingdom: Animalia **Phylum:** Chordata **Class:** Mammalia **Order:** Primates **Family:** Hominidae **Genus:** *Homo* **Species:** *H. sapiens*

Man is zoologically an 'animal'; a 'vertebrate' [chordate]; a mammal; and a primate, owing to his large brain, stereoscopic vision and well-adapted hands. It is generally considered that the living animal he most closely resembles is the chimpanzee. There are no other living members of the Family Hominidae or Genus *Homo*; extinct relatives claimed from ape-like fossil remains are disputable.

¹⁹ Brittain, J., from *The Great Naturalists* Huxley, R. [Ed.], Thames & Hudson/Natural History Museum, (2007), p. 26

Some Unique Features of the Human Body

The human body displays numerous physical features that are unique and are not comparable in any of the great apes such as chimpanzees, gorillas or orang-utans. These may be anatomical (structural) or physiological (functional) differences. (For economy of space, these are listed in note form rather than in full sentences.)



The Human Frame



Skeleton of Chimpanzee

SPINE Bodies of vertebrae taper in size upwards to support weight in bipedal stance. Well-developed intervertebral disks. Double curvature in neck and sacrum, forming an S-shaped spinal column, essential for upright stance and balance for standing, kneeling, sitting.

SPINE Long spines and transverse processes on cervical vertebrae for attaching large neck muscles. Cantilever spine suited for quadrupeds. No forward curvature in neck and lumbar regions.

[No suitable posture for prayer!]

ARMS AND HANDS

Arms relatively much shorter. Far less powerful muscles in the arms. More mobile shoulder, forearm and wrist joints. Longer fingers and fully-opposable thumb. Muscle to point index finger. Very well developed senses in hands.

PELVIS AND GAIT

Shorter but broader hip-bone, for attachment of abdominal and buttock muscles, well developed for upright posture, balance on one leg, and locomotion.

LEGS AND FEET

Large calf and anterior thigh muscles. Femur allows knees to be held together when standing. Knee and ankle joints allow upright standing, sitting and kneeling. Arched sole of foot, flat to the ground. Ankle joint at right angle to tibia. Shorter digits, with 'big toe' the largest and longest, but not opposable.

ARMS AND HANDS

Arms relatively much longer; forearm longer than humerus; used in 'knuckle walking' and climbing. Very large muscles along arms. Less mobility of the hands. Shorter fingers and non-opposable thumb. Less developed sensory supply to hand.

PELVIS AND GAIT

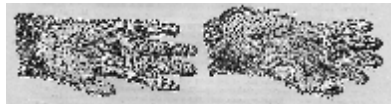
Long, narrow, slanting pelvis. Muscles developed to assist quadrupedal gait.

LEGS AND FEET

Knees and ankles do not allow legs to straighten completely or body to balance upright. Foot not arched, so walks on side of foot. Ankle joint oblique, with foot turned outwards. Longer digits, with opposable 'big toe' like a hind thumb for grasping.

Hand

Foot



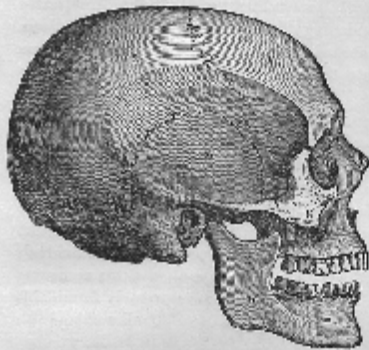
Cuvier classified Man in his own Order—the Bimana [i.e. two-handed]—as opposed to the Order Quadramana [four-handed] apes and monkeys.¹

¹ Cuvier, Baron, *The Animal Kingdom* (first edition 1816).

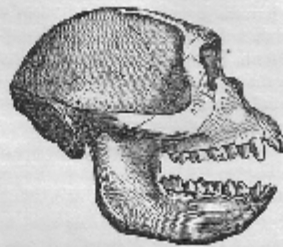
Engravings taken from *Cassell's Popular Natural History* (Vol. 1), revised edition (undated)

HUMAN

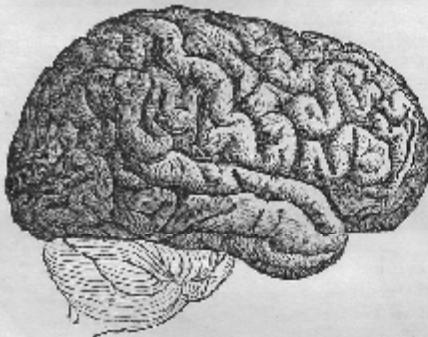
CHIMPANZEE



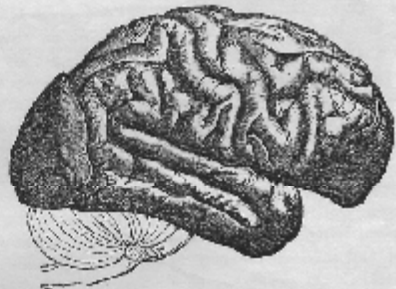
HUMAN SKULL.



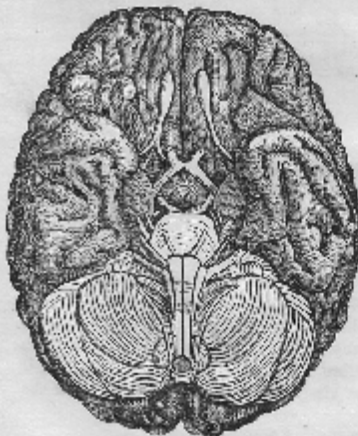
SKULL OF CHIMPANZEE.



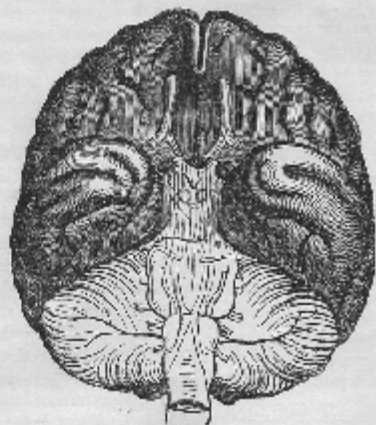
HUMAN BRAIN.



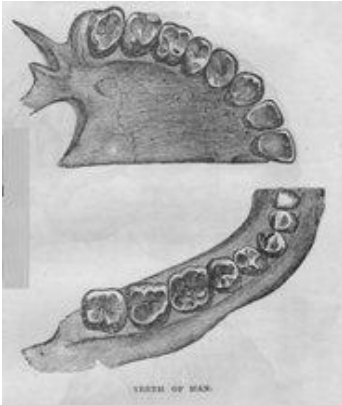
BRAIN OF CHIMPANZEE.



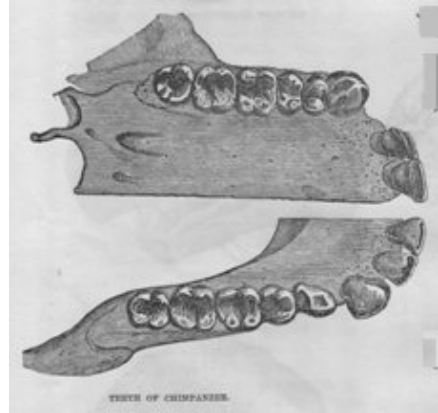
HUMAN BRAIN.



BRAIN OF CHIMPANZEE.

**Man**

Jaws and teeth

**Chimpanzee****SKULL**

Nearly vertical forehead and face. Brow ridges absent. Large protruding nose. Protruding chin. Premolars single rooted. Smaller, lighter jaw. Parabolic dental arcades. Occipital and temporal crests absent.

Foramen magnum beneath skull, as head is placed upright on neck. Perfectly designed for erect stance.

BRAIN

From 750 - 2350 cc; average male about 1500 cc. Full rounded appearance. More developed cerebral hemispheres, frontal and occipital lobes. Greater number of convolutions.

SKULL

Sloping forehead and face. Heavy brow ridge. Flat nose. Long canine teeth, with a gap. Receding chin, with inner 'simian shelf'. Double rooted premolars. Larger, heavy jaw.

U-shaped dental arcades. Occipital and temporal crests for attachment of large neck and jaw muscles.

Foramen magnum angled to meet first vertebra, so skull is not balanced above spine.

BRAIN

Volume of skull in adult male ape varies between 90 cc. and 685 cc. Gorilla: 510 cc. Chimpanzee: 410 cc. Compressed and flattened. Fewer convolutions.

Further distinctive features of Man

In addition to the above points of contrast, there are several more distinct differences between the muscles of man and the chimpanzee, as well as many other uniquely human physical and behavioural characteristics. Here is a brief outline of these facts.

THE FACE The highly variable human facial features provide unique individuality (apart from identical twins), but less variability of racial characteristics and size: evidence of the unity of the human species. Complex subcutaneous facial muscles in the chin and forehead, around the eyes, nose and mouth, make possible a huge range of expressions. Facial communication and interaction are pre-programmed in infancy for recognition.

Only humans express joy and pleasure by smiling. The eyes respond to emotional states to be the ‘windows of the soul’. The large nose, turned-out lips and earlobes provide secondary erogenous zones in love-making. Only humans can die from a bleeding nose!

SPEECH Humans, unlike other mammals, normally utter sounds without raising the head, permitting level face-to-face conversation. The projecting chin allows more freedom for movement of the tongue, so enabling much more varied sound production. The pharynx, position of the tongue, shape of the mouth and the larynx are uniquely suited for speaking and singing. Unlike animals, we cannot drink and breathe at the same time, except in infancy (up to about two years old) to allow for breast feeding.

SKIN Humans are one of only a few of the 4200 species of mammals, and the only one of 200 primates, not covered by fur or hair. This might seem a disadvantage in giving less protection and warmth, and increasing exposure to damaging ultraviolet radiation, but for our use of clothing. This also allows far greater sensitivity of the skin, and more tactile responses, needed in intimate interpersonal relationships, including assisting the neural development of the child. The skin reactions also express emotions, such as reddening with anger or sweating with fear. Humans are also the only creatures who blush—or ever have the need to do so!

Human skin is a supreme thermo-regulator, by varying blood flow in the surface of the skin, and by the action of some 2 million sweat glands releasing sweat in hot conditions. There are even two types of sweat glands: one responds to heat, the other to emotions!

Unlike other primates, humans have a layer of fat beneath the skin to insulate them from the cold. Exposure to sun usually results in tanning, by which dark eumelanin pigment helps to provide a protective filter from harmful radiation. Redheads have a higher proportion of pheomelanin, and may not be able to get a tan.

Skin colour is determined by the genetic potential for melanin production. Noah and his family were probably a mid-brown colour. After Babel, language barriers contributed to isolation of populations and natural selection of different 'races'. As was mentioned earlier [see footnote 14], Darwin was unable to apply his theory to provide a simple explanation of racial differences. (But of course, he avoided any employment of the facts of Biblical history.)²

REPRODUCTION AND DEVELOPMENT Humans are designed for intense personal face-to-face pair-bonding (within marriage), without limitations of seasonal breeding periods. Several unique endogenous features maximise pleasurable physical experiences.

Only humans have the anatomical attributes associated with the religious practice of circumcision and the definition of female virginity. Only human females routinely suffer pain in normal childbirth.³ It should be noted that the human embryo develops into the foetus without passing through an ape-like stage, so denying the theory of embryonic recapitulation.⁴ Organs like the appendix, thymus and coccyx, once thought to be useless vestiges of evolutionary ancestors, have on closer investigation been proved to be useful structures in humans.

² For more details, see Carl Wieland *One Human Family*, Creation Book Publishers (2011)

³ "I will multiply thy sorrows, and thy conceptions. In sorrow shalt thou bring forth children..."
Gen. 3:16

⁴ "We now know, for instance, that man, in his prenatal stages, does not go through the complete evolution of life - from a single cell to a fish-like water creature to man. Today it is known that every step in the fetal development process is specifically human."
Dr. S. Schwabenthan. *Parents*. October 1979.

Humans have the longest maturation span of any creature, being absolutely dependent on others for survival for many years. Most animals reach 60% of their adult size in one year: we take 14 years. The skull does not fully ossify until age nineteen, so allowing the brain to continue growth. Yet the three ossicles of the middle ear do not grow at all, because they are full-sized at birth! The hand and the pelvis are very slow to develop, and maturity comes later than in even the large primates. Language and cultural development are also much slower in humans, though human life-span today is typically over twice that of the large apes, contrary to predictions based on body size and metabolic rate, but consistent with having a larger brain.

BRAIN AND BEHAVIOUR The human brain is only 1/4 the mass of a whale's brain, and marmoset monkeys may have a 1: 1 ratio of brain mass to body mass. Brain/body ratio in elephants is 1/1000, chimpanzees 1/150, gorilla 1/500 and man 1/50. But it is neither just the absolute mass nor the relative mass that determines intelligence.⁵ Human brains are not just bigger than ape brains - they have unique complex structures such as the following:

- Frontal cortex, forming about one-half of the cerebral cortex, and concerned with complex behaviour, self-awareness, memory usage, control, planning etc.
- Association areas, which serve to integrate sensory inputs from seeing, hearing and touch. Damage to these areas in humans has much more effect on self-awareness, reasoning, language and behaviour than it would in apes.
- Hemisphere specialisation, with certain functions more involved with only one side of the brain, such as Broca's speech centre on the left side. The tendency to right-handedness (80-90%) is uniquely human. Association between hemispheres in humans comes through the large *corpus callosum*.

⁵ "In man is a three-pound brain which, as far as we know, is the most complex and orderly arrangement of matter in the universe." I. Asimov, *In the Game of Energy and Thermodynamics You Can't Even Break Even*, Smithsonian (June 1970), p.10.

Specifically human behaviour includes spiritual, mental and cultural aspects, e.g. free will, imagination, abstract reasoning, moral sense, detailed memory, number, writing, language, humour, laughter, religious sense and worship, burying the dead, conscience, guilt, weeping, poetry, art, use of tools, fire, dress, weapons, etc.

IN SUMMARY The basic facts have not changed since this was written in a popular Victorian natural history text:

It is admitted that among apes we find the animals who make the nearest approach to man. It were enough to say that his mental and moral nature raises man immeasurably above them; but he is even clearly distinguishable from those most like to him, and the most sagacious of all, in his physical being. One remarkable proof of this appears in that constitutional property which enables him to exist and increase in every climate of the earth, and to live on every variety of nutriment that it yields. On the other hand, were even the strongest animals gathered together from the arctic circle or torrid zone, to some central spot, so ill-suited is their constitution to such a change, that they would soon seriously suffer, and even be destroyed by the diseases that would inevitably arise.⁶

The first version of this article appeared in *Daylight No 24*, 1997, and an updated and expanded version in *Daylight 43*, March 2012.

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In addition there are many articles and books by scientists that discuss the problematic nature of the alleged evidence for ape-man intermediates.

⁶ Cassell's *Popular Natural History* (Vol. 1), revised edition (c. 1860), p. 6



The Vaccination Question

Alfred Russell Wallace

From *My Life – A Record of Events
and Opinion* (2nd Edn. 1908) ¹



I will here say a few words about another subject in which I take a great interest, and upon which I have ventured to express views contrary to those held by the orthodox authorities.

I was brought up to believe that vaccination was a scientific procedure, and that Jenner was one of the great benefactors of mankind. I was vaccinated in infancy, and before going to the Amazon I was persuaded to be vaccinated again. My children were duly vaccinated, and I never had the slightest doubt of the value of the operation—taking everything on trust without any inquiry whatever—till about 1875-80, when I first heard that there were anti-vaccinators, and read some articles on the subject. These did not much impress me, as I could not believe so many eminent men could be mistaken on such an important matter. But a little later I met Mr. William Tebb, and through him was introduced to some of the more important statistical facts bearing upon the subject. Some of these I was able to test by reference to the original authorities, and also to the various Reports of the Registrar-General, Dr. Farr's evidence as to the diminution of small-pox *before* Jenner's time, and the extraordinary misstatements of the supporters of vaccination. Mr. Tebb supplied me with a good deal of anti-vaccination literature, especially with "Pierce's Vital Statistics," the tables in which satisfied me that the claims for vaccination were enormously exaggerated, if not altogether fallacious. I also now learnt for the first time that vaccination itself produced a disease, which was often injurious to health and sometimes fatal to life, and I also found to my astonishment that even Herbert Spencer had long ago pointed out that the first compulsory Vaccination Act had led to an increase of small-pox. I then began to study the Reports of the Registrar-General myself, and to draw out curves of small-pox mortality, and of other zymotic diseases (the only way of showing the general course of a disease as well as its annual inequalities), and then found that the course of the former disease ran so generally parallel to that of the latter as to disprove altogether any *special protective effect* of vaccination.

¹ Ibid., Cosimo Classics (2007) pp 329-333. Various other versions available on line. N.B. This extract is not intended as a general critique of all forms of immunisation. *Ed.*

As I could find no short and clear statement of the main statistical facts adverse to vaccination, I wrote a short pamphlet of thirty-eight pages, entitled "Forty-five Years of Registration Statistics, proving Vaccination to be both Useless and Dangerous." This was published in 1885 at Mr. W. Tebb's expense, and it had the effect of convincing many persons, among whom were some of my personal friends.

A few years later, when the Royal Commission on Vaccination was appointed, I was invited to become a member of it, but declined, as I could not give up the necessary time, but chiefly because I thought I could do more good as a witness. I accordingly prepared a number of large diagrams, and stated the arguments drawn from them, and in the year 1890 gave my evidence during part of three days. As about half the Commissioners were doctors, most of the others gave way to them. I told them, at the beginning of my evidence, that I knew nothing of medicine, but that, following the principle laid down by Sir John Simon and Dr. Guy, that "the evidence for the benefits of vaccination must now be statistical," I was prepared to show the bearing of the best statistics only. Yet they insisted on putting medical arguments and alleged medical facts to me, asking me how I explained this, how I accounted for that; and though I stated again and again that there were plenty of medical witnesses who would deal with those points, they continually recurred to them; and when I said I had no answer to give, not having enquired into those alleged facts, they seemed to think they had got the best of it. Yet they were so ignorant of statistics and statistical methods that one great doctor held out a diagram, showing the same facts as one of mine, and asked me almost triumphantly how it was that mine was so different. After comparing the two diagrams for a few moments I replied that they were drawn on different scales, but that with that exception I could see no substantial difference between them. The other diagram was on a greatly exaggerated vertical scale, so that the line showing each year's death-rate went up and down with tremendous peaks and chasms, while mine approximated more to a very irregular curve. But my questioner could not see this simple point; and later he recurred to it a second time, and asked me if I really meant to tell them that those two diagrams were both accurate, and when I said again that though on different scales both represented the same facts, he looked up at the ceiling with an air which plainly said, "If you will say that you will say anything!"

The Commission lingered on for six years, and did not issue its final report till 1896, while the evidence, statistics, and diagrams occupied numerous bulky blue-books. The most valuable parts of it were the appendices, containing the tables and diagrams presented by the chief witnesses, together with a large

number of official tables and statistics, both of our own and foreign countries, affording a mass of material never before brought together. This enabled me to present the general statistical argument more completely and forcibly than I had done before, and I devoted several months of very hard work to doing this, and brought it out in pamphlet form in January, 1898, in order that a copy might be sent to every member of the House of Commons before the new Vaccination Act came up for discussion. This was done by the National Anti-Vaccination League, and I wrote to the half-dozen members I knew personally, begging them to give one evening to its careful perusal. But so far as any of their speeches showed, not one of the six hundred and seventy members gave even that amount of their time to obtain information on a subject involving the health, life, and personal freedom of their constituents. Yet I *know* that in no work I have written have I presented so clear and so conclusive a demonstration of the fallacy of a popular belief as is given in this work, which was entitled “Vaccination a Delusion: Its Penal Enforcement a Crime, proved by the Official Evidence in Reports of the Royal Commission.” This was included in the second part of my “Wonderful Century,” published in June, 1898, and was also published separately in the pamphlet form, as it continues to be; and I feel sure that the time is not far distant when this will be held to be one of the most important and most truly scientific of my works.²

Comment: Wallace’s entry in *Wikipedia* notes that: “Wallace discovered instances where supporters of vaccination had used questionable, in a few cases completely false, statistics to support their arguments. Always suspicious of authority, Wallace suspected that physicians had a vested interest in promoting vaccination, and became convinced that reductions in the incidence of smallpox that had been attributed to vaccination were due to better hygiene and improvements in public sanitation.” His arguments were opposed by *The Lancet* with counter-claims that *Wallace* was misusing statistics.

The article continues that, after his death in 1913, “For a long time, he was treated as a relatively obscure figure in the history of science. Reasons for this lack of attention may have included his modesty, his willingness to champion unpopular causes without regard for his own reputation, and the discomfort of much of the scientific community with some of his unconventional ideas.”³

The informed reader will have noted the striking resemblances of Wallace’s ‘conversion’ story to vaccination scepticism with a number of latter-day scientists and others in respect of the COVID-19 phenomenon and gene-therapy treatments. *Editor.*

² This work can be read online at <https://www.gutenberg.org/ebooks/58918>

³ See: https://en.wikipedia.org/wiki/Alfred_Russel_Wallace

THE GREAT PENGUIN EGG-HUNT

Anthony Nevard

The British Antarctic Expedition of 1910 set out with some 65 souls, including 19 officers and scientific staff, of whom five tragically were to perish in the event, including the Captain, Robert Falcon Scott, R.N. Another of the dead was the Chief Zoologist, Edward Wilson, who was driven by his desire to discover the secret of the evolution of birds from reptiles. He had written in 1907:



The possibility that we have in the Emperor penguin the nearest approach to a primitive form not only of a penguin but of a bird, makes the future working out of its embryology a matter of the greatest possible importance.¹

The goal of collecting penguin eggs was secondary to the target of being the first men to reach the South Pole. Those who eventually did so found they had been beaten by Amundsen's party; they themselves were never to return alive.

Dedication to Darwinian ideology

Wilson was clearly convinced by the speculation that the penguin was a living form of a 'primitive' bird that presumably had evolved from an earlier less advanced creature such as a reptile or dinosaur. Why should he think that the study of its embryology would have anything to reveal unless he had taken up Darwin's notions of embryonic recapitulation, which he had elevated to being a 'law of nature'?

As the embryo often shows us more or less plainly the structure of the less modified and ancient progenitor of the group, we can see why ancient and extinct forms so often resemble in their adult state the embryos of existing species of the same class.²

This, of course, explains the fascination for obtaining and studying supposedly-primitive bird embryos that might display features of their earlier ancestry. And Wilson had indeed studied Darwin's ideas, as assistant zoologist Apsley Cherry-Garrard recalled:

I have heard Scott and Wilson bless the thought which led them to take Darwin's

¹ Wilson, Edward A., *Aves*. National Antarctic Expedition, I 901-4, Zoology II, Vertebrata No. 2, 1 (1907).

² Darwin, C., *Origin of Species* (6th Edn.), 1872, John Murray, p.618

Origin of Species on their first Southern Journey.³

Scott's journals provide a closely-dated diary of the whole expedition, right up to his demise. He was not one of the three men to undertake the horrendous Winter Journey, for which we need to turn to the narrative from Cherry, and Scott has much less to report about the penguins, but he does make a few comments on the team's evolutionary interests:



Emperors, Barrier, and Sea Ice

We have added a great deal to the knowledge of life in the pack⁴ from observation of the whales, seals, penguins, bird and fishes as well as of the pelagic beasts which are caught in tow-nets. Life in one form or another is very plentiful in the pack, and the *struggle for existence* here as elsewhere is a fascinating subject for study.⁵

Cherry stresses the high motivation of his group to make their special contribution to the world of Science:

Our small company was desperately keen to obtain results. The youngest and most cynical pessimist must have had cause for wonder to see a body of healthy and not unintellectual men striving thus single-mindedly to add their small quota of scientific and geographical knowledge to the sum total of the world – with no immediate prospect of its practical utility.⁶ (...)

We travelled for Science. Those three small embryos from Cape Crozier, that weight of fossils from Buckley Island, and that mass of material, less spectacular, but gathered just as carefully hour by hour in wind and drift, darkness and cold, were striven for in order that the world may have a little more knowledge, that it may build on what it knows instead of on what it thinks.⁷

Clearly the minds of several of the party were full of speculation about the origins of the creatures they encountered. Different members of the party would give lectures to the rest on a range of subjects on which each had

³ Cherry-Garrard, A., *The Worst Journey in the World*, Penguin Books, p. 245 [WJW]

Read online at <https://www.gutenberg.org/cache/epub/14363/pg14363-images.html>

⁴ Every year as winter approaches, the surface waters around Antarctica freeze into a slab of ice 10-feet thick, effectively doubling the size of the continent. In the summer, the slab of ice breaks up into 'pack ice', which eventually drifts out to sea and melts. This sea ice is a critical habitat for nearly all the living inhabitants of Antarctica [Ed]

⁵ Scott, R.F., *Scott's Last Expedition*, John Murray (1923), p.58, [my italics] [SLE]

Read online at <https://www.gutenberg.org/cache/epub/11579/pg11579-images.html>

⁶ WJW, p. 273

⁷ WJW, p. 275

expertise. Two of those by eminent biologists are of interest here. In his diary entry for May 15th Scott notes,

[Edward] Wilson gave an interesting lecture on penguins. He explained the primitive characteristics in the arrangement of feathers on wings and body, the absence of primaries and secondaries or bare tracts; the modification of the muscles of the wings and in the structure of the feet (the metatarsal joint). He pointed out (and the subsequent discussion seemed to support him) that these birds probably branched at a very early stage of bird life – coming pretty directly from the lizard bird *Archaeopteryx* of the Jurassic age. Fossils of giant penguins of Eocene and Miocene ages show that there has been extremely little development since. (...)

Of special points of interest I recall his explanation of the desirability of embryonic study of the emperor to throw further light on the development of the species in the loss of teeth, &c.⁸

On May 26th the members of the company were regaled with more mental speculations which must have further heightened their enthusiasm:

[Edward] Nelson lectured to us to-night, giving a very able little elementary sketch of the objects of the biologist. A fact struck me in his explanation of the rates of elimination. Two of the offspring of two parents alone survive, speaking broadly; this is the same of the human species or the 'ling,' with 24,000,000 eggs in the roe of each female! He talked much of evolution, adaptation &c. Mendelism became the most debated point of the discussion; the transmission of characters has a wonderful fascination for the human mind.⁹

Planning the Winter Journey

Cherry-Garrard recalled, as the three men had struggled with their heavy-laden sledges in June, 2011 as they start their epic egg-hunt,

As we rested my mind went back to a dusty, dingy office in Victoria Street [London] some fifteen months ago, 'I want you to come,' said Wilson to me, and then, 'I want to go to Cape Crozier in the winter and work out the embryology of the Emperor penguins, but I'm not saying much about it – it might never come off.'¹⁰

For the detailed account of the penguin hunt, we turn to the chapter 'The Winter Journey' in Cherry-Garrard's book. The "horror of the nineteen days it took us to travel from Cape Evans to Cape Crozier would have to be re-experienced to be appreciated." Bowers, Wilson and Cherry hauling two heavy

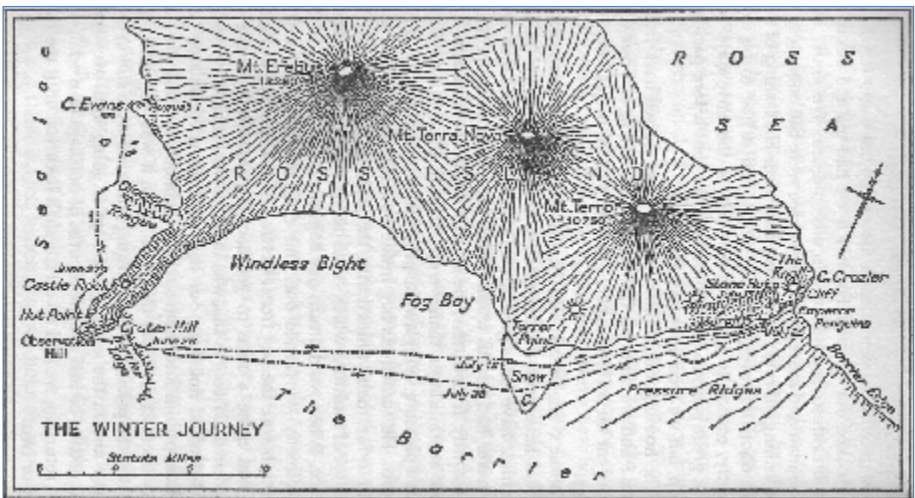
⁸ SLE, p. 215-6

⁹ SLE, p. 226

¹⁰ WJW, p. 281

What is this venture? Why is the embryo of the Emperor penguin so important to Science? And why should three sane and common-sense explorers be sledging away on a winter's night to a Cape which has only been visited before in daylight, and then with very great difficulty?

Only one rookery of Emperor penguins had been found at this date, and this was on the sea-ice inside a little bay of the Barrier edge of Cape Crozier...Chicks had been found in September, and Wilson reckoned that the eggs must be laid in the beginning of July. And so we started just after midwinter on the weirdest bird's-nesting expedition that has ever been or ever will be. ¹¹



Map from WJW, p. 346

¹¹ WJW, p. 282

Some five months earlier, in summer waters further North, a small party had lowered a whale boat from the *Terra Nova* with the intention of exploring the shoreline of the Crozier cliffs. Cherry reports that they observed a large piece of ice flow on which:

...we saw an old Emperor moulting and a young one shedding its down. (The down had come off the head and flippers and commenced to come off the breast in a vertical line similar to the ordinary moult.) This is an age and stage of development of the Emperor chick of which we have no knowledge, and it would have been a triumph to have secured the chick, but, alas! there was no way to get at it.¹²

Nearing their quarry

On the winter journey, after twenty days of harsh struggle, it was now July 19th and our intrepid trio were negotiating hazardous crevasses to work their way down cliffs to the sea-ice, with only short periods of moonlight or daylight. Firstly they heard the Emperors, and eventually managed to gain sight of the huddle of birds.

After indescribable effort and hardship we were witnessing a marvel of the natural world, and we were the first and only men who had ever done so; we had within our grasp material which might prove of the utmost importance to science; we were turning theories into facts with every observation we made, — and we had but a moment to give. [...]

The men of the *Discovery*¹³ found this rookery where we now stood. They made journeys in the early spring but never arrived early enough to get eggs and only found parents and chicks. They concluded that the Emperor was an impossible kind of bird who, for some reason or other, nests in the middle of the Antarctic winter with the temperature anywhere below seventy degrees of frost, and the blizzards blowing, always blowing, against his devoted back.¹⁴

Cherry outlines the harsh conditions under which the penguins breed, with a high mortality rate, but when summer comes, the parents take their offspring across the sea-ice to the open sea, to drift off on ice floes.

¹² SLJ, p. 64.

In a note in the Appendix of SLE, Wilson is quoted from his diary entry referring to the incident cited above: “This young Emperor was still in the down, a most interesting fact in the bird’s life history at which we had rightly guessed, but which no one had actually observed before. It was in a stage never yet seen or collected, for the wings were already quite clean of down and feathered as in the adult, also a line down the breast was shed of down, and part of the head. This bird would have been a treasure to me, but we could not risk life for it, so it had to remain where it was.” [ibid., p.483]

¹³ Scott’s research ship that visited Antarctica in 1902.

¹⁴ WJW, p. 318

You must agree that a bird like this is an interesting beast, and when, seven months ago, we rowed a boat under those great black cliffs, and found a disconsolate Emperor chick still in the down, we knew definably why the emperor had to nest in mid-winter. For if a June egg was still without feathers in the beginning of January, the same egg laid in the summer would leave it produce without practical covering for the following winter. This the Emperor penguin is compelled to undertake all kinds of hard ships because his children insist on developing so slowly, very much as we are tied in our human relationships for the same reason. It is of interest that such a primitive bird should have so long a childhood.

But interesting as the life-history of these birds must be, we had not travelled for three weeks to see them sitting on their eggs. We wanted the embryos, and we wanted them as young as possible, and fresh and unfrozen, that specialists at home might cut them into microscopic sections and learn from them the previous history of birds throughout the evolutionary ages.¹⁵

They collected five eggs and killed and skinned three birds. The description of the ‘horrors of that return journey’ cannot be adequately reduced to a few sentences – the reader is amazed that all three men survived the experience. As in the end did just three eggs.

Continuing the ill-fated trek to the Pole

On August 2nd, Scott noted in his journal:

Wilson is disappointed at seeing so little of the penguins ... Moreover the material results are by no means despicable. We shall know now when that extraordinary bird the Emperor penguin lays its eggs, and under what conditions; but even if our information remains meager concerning its embryology, our party has shown the nature of the conditions which exist on the Great Barrier in winter.¹⁶

As the journey approaches nearer to the South Pole, Scott makes no further reference to the penguins as the group concentrate on the rigours of making progress and of sheer survival.¹⁷ The final party of five, Scott, Wilson, Evans, Bowers and Oates, are selected on January 4th and reached the Pole on January 18th, 1912, discovering that Amundsen and four companions had already been there on 16 December 1911. Their tragic attempt to return was marked by the death of Evans (Feb 18th) and the disappearance of Oates on March 17th, with the courageous and poignant words: ‘I am just going outside and may be some

¹⁵ WJW, p. 319-20

¹⁶ SLE, p. 287-8

¹⁷ As the party moved further South and away from the Ross Sea, they would not expect to see more penguins, which of course depend on fish for food. It was some 800 miles to the Pole.

time.’ Scott’s final diary entry was on March 29th, after which it would be eight months before the tent would be discovered containing the bodies of Scott, Wilson and Bowers, and his journals recording their unique experiences.

The fate of the eggs and the reactions of Science

Cherry has provided a stunning description of this journey which succeeded in collecting “three penguin’s eggs for which three human lives had been risked three hundred times a day, and three human frames strained to the utmost extremity of human endurance.” There was no rapturous welcome home in honour of his feat. He recounts with wry sarcasm the casual and “extraordinarily offensive” attitude of the staff of the Natural History Museum, South Kensington, when he visited in 1913 to offer them ‘the Sacred Eggs’. The Chief Custodian “takes them into custody without a word of thanks,” and Cherry has to wait several hours for a receipt for which he insists. Some time after this, Cherry revisited the NHM with Captain Scott’s sister, who asked to see the eggs. The staff initially denied any knowledge of them! Cherry gave them twenty-four hours to certify in writing that the eggs were safe or else very damaging publicity would follow! This was an effective ultimatum, and he was later relieved to learn that Professor Assheton had been entrusted with the microscopic examination of the eggs, though owing to his demise they were later examined by Professor Cossar Ewart of Edinburgh University. His report concludes the first volume of the book, and a summary follows here.¹⁸

Ewart’s report begins by noting that Dr Wilson had been very disappointed that Emperor penguin embryos “were conspicuous by their absence” from the earlier cruise of the *Discovery*. However, some discoveries were ascertained regarding their breeding habits in respect of their location, timing and manner of egg incubation. The main aim of the visit to the Cape Crozier penguin rookery in the breeding season was the hope that “Emperor embryos would throw new light on the origin and history of birds.”

The report recounts the evolutionary wisdom of the day that:

...birds are descended from bipedal reptiles ...millions of years ago, in build not unlike the kangaroo. From *Archaeopteryx* of Jurassic times we know primeval birds had teeth, three fingers with claws on each hand, and a long lizard-like tail provided with nearly twenty pairs of well-formed true feathers. But unfortunately neither this lizard-tailed bird, nor yet any fossil birds found in America, throw any light on the origin of feathers.

¹⁸ WJW, pp 351-353

Ornithologists have ‘as a rule’ assumed feathers for flight and warmth arose from scales; however, the report does not agree:

...but as it happens, a study of the development of feathers affords no evidence that they were made out of scales. There are neither rudiments of scales nor feathers in very young bird embryos.” [ibid., p. 254]

There follows several paragraphs of quite technical discussion regarding the nature and timing of the appearance of feather papillae in bird embryos. Ewart concludes that “there is no evidence that feather papillae ever develop into scales or that scale papillae ever develop into feathers” and therefore the two types are fundamentally different. It appears that study of the penguin embryos confirmed what was already known from other birds such as geese, though Ewart concedes that “the worst journey in the world in the interest of science was not made in vain.”¹⁹

Despite the dedication, determination, courage and convictions of these men in pursuing their objective to prove the evolutionary origins of penguins, they failed to collect the necessary evidence. Embryos collected in 1949 did not solve the problem [see note below]. A reputable modern text claims:

One of the few certainties [sic] about the origin of birds is that they evolved from reptiles. (...) Uncertainty concerning avian origin and affinities still persists.²⁰

So far as the embryos are concerned, they follow the unique development of their kind and do not recapitulate any reptilian forebears.

At ten days, the chicken embryo is recognizable as a bird with a beak, wings, feet, complete with a skeleton of cartilage, and tiny spots on its skin that are the beginnings of feathers. [ibid., p. 44].

¹⁹ WJW, p. 356

More recent research is cited in an article in *Nature* [21 Feb 1953] which includes the following:

It was not until 1949 that Stonehouse collected a series of Emperor penguin embryos from a rookery fifty miles from one of the bases of the Falkland Islands Dependencies Survey. As a result of this expedition we now possess a new series of sixteen embryos collected between June and August and extending from the primitive streak stage to hatching. All the embryos, with one exception, are in an excellent state of preservation [...]

In the earlier embryos the head region is relatively smaller, the neck and tail regions relatively longer, and the curvatures less well marked in penguin than in chick embryos. These features are more marked in Emperor penguin embryos and result in early penguin embryos resembling early reptilian embryos more closely than do early chick embryos.

GLENISTER, T. Embryology of the Emperor Penguin (*Aptenodytes forsteri*). *Nature* 171, 357 (1953). <https://doi.org/10.1038/171357b0>

²⁰ Brooke & Birkhead (Eds), *The Cambridge Encyclopaedia of Ornithology*, CUP (1991), p.69

In conclusion, Cherry's afterthoughts on penguins and evolution

Towards the end of his book, Cherry acknowledges uncertainty about how primitive Emperor penguins really are, and expresses doubts about their ancestry. Although he later collected a series of Adélie penguin embryos, these do not seem to have given him the answers he had been hoping for.

For three weeks I worked among the Adélie penguins at Cape Royds, and obtained a complete series of their embryos. It was always Wilson's idea that embryology was the next job of a vertebral zoologist down south. I have already explained that the penguin is an interesting link in the evolutionary chain, and the object of getting this embryo is to find out where the penguins come in. Whether or no they are more primitive than other nonflying birds, such as the apteryx, the ostrich, the rhea and the moa, which last is only just extinct, is an open question. But wingless birds are still hanging on to the promontories of the southern continents, where there is less rivalry than in the highly populated land areas of the north. It may be that penguins are descended from ancestors who lived in the northern hemisphere in a winged condition (even now you may sometimes see them try to fly), and that they have been driven towards the south.

If penguins are primitive, it is rational to infer that the most primitive penguin is farthest south. These are the two Antarcticists, the Emperor and the Adélie. The latter appears to be the more numerous and successful of the two, and for this reason we are inclined to search among the Emperors as being among the most primitive penguins, if not the most primitive of birds now living: hence the Winter Journey.²¹



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Requiescant in pace

[For an earlier list please see *Daylight* #70, p.19]

²¹ WJW p. 624

The Wonder of Corals

Rev. William Kirby, M.A.

ON THE HISTORY HABITS AND
INSTINCTS OF ANIMALS ¹

When the Creator formed the coral animals, what foresight, as well as power and wisdom did he manifest! That a minute pouch of animated matter, with no other organs than a few tentacles surrounding its mouth, should be fitted



Drawing of various coral forms

to secrete calcareous particles from food collected by it, to transpire or regurgitate them so as to construct for itself a limestone house, that it should be empowered perpetually to send forth germes ² that could also act the same part; and thus in process of time, by their combined efforts, build up in the midst of the fluctuating ocean, not merely insignificant islets, but whole groups of islands, which in due time are rendered fit for the habitation of man himself, and do in fact become his permanent abode—but not only this, but should so order all other circumstances connected with this procedure, as, for instance, the action of the waves and winds upon this nascent little world, that when the animal has built up to that point, which its nature, for it cannot exist when removed from the influence of its native element, enables it to attain, should take up the wonderful work and complete the design of the Great Creator, and give the structure its due elevation and consolidation, should furnish it with fountains and streams of water; should cover it with a soil capable of affording sufficient nutriment to trees and plants, which should in their turn afford food for some part of the animal kingdom, and finally for man himself. How evidently does all this show the adaptation of means to an end. What a number of calculations must be made, what a number of circumstances taken into consideration, what a number of contingences provided against, what a number of conflicting elements made to harmonize and subserve to the promotion of a common purpose, which it is impossible could have been effected but by the intervention and constant guidance of an unseen Being, causing all things so to concur, as to bring about and establish what he designs! And, when we further

¹ From ‘*The Bridgewater Treatises – on the Power Wisdom and Goodness of God as Manifested in the Creation – Treatise VII*’, William Pickering (1835), pp 186 – 191.

[Title and illustrations added for this extract.]

² Equivalent of ‘seeds’ – this spelling still exists in French [Ed.]

consider the multiplicity of aspects in which the subject must be viewed, in order to get a clear and correct idea of the co-operation of so many causes, seeming often at variance with each other; we may further affirm, without fear of contradiction, that the whole must be the plan and the work, as the primary and only intelligent cause, of a Being infinite in power, wisdom, and goodness.

There are two circumstances in the above account of the proceedings of these animals, that more particularly demonstrate Divine interposition. One is the precaution to which they have recourse when they build a circular reef in the sea, that they leave an opening in this part for the entrance of the tide and its reflux, so that a constant renovation of the waters takes place without which they could not proceed in their operations, for want of their necessary aliment.

³

The other is, not only that they erect their buildings in the form best calculated to resist the action of the ocean, but also erect break-waters to strengthen the weakest points, and those from which the greatest danger is to be apprehended.

It is clear that beings so little organized, with scarcely any sense or feeling, are not sufficient of themselves to take these precautions, they must be directed and impelled by some power acting upon them; which, foreseeing the want, provides for it; this can be no physical power, for that is equally without intelligence, and acts necessarily, but it must be the result of the will and original action of Supreme Intelligence, who either so organized the animal as to direct it to certain acts, when placed in certain circumstances, by the agency of physical powers; or by his own immediate employment of these powers, influenced its action, as the occasion required.

I cannot conclude this history of the Polypes ⁴ without adverting to another circumstance which proves in a very striking manner the intervention of the Deity: and that they could not have assumed the various forms under which we behold them, from peculiar circumstances, to the influence of which, in the lapse of ages they were exposed. When we see animals, buried in the bosom of the ocean, symbolize the whole vegetable world from the tree to the moss and lichens that vegetate on its trunk, and the agaric or other funguses that spring up beneath it, we are naturally led to inquire into the reason of this system of representation, exhibited by beings that have no affinity, nor are even contrasted with each other by juxta-position.

³ i.e. food; as in the gut, or 'alimentary canal' [Ed.]

⁴ In the classification system used by Cuvier, the Polypi were a class of the Radiata, broadly including sea anemones, Hydra, and corals. They now belong to the Anthozoa. [Ed.]

One of the general objects of the vegetable kingdom was to ornament the dry-land with what was *fair to look upon*, as well as with what *was good for food*. But the depths of ocean, though planted with various vegetables, seem unapt to exhibit in beauty the frail blossoms of the plant, which though they can bear the fluctuations of their own atmosphere, must often be destroyed by the greater weight and more irresistible agitations of a denser element. To ornament the bosom of the deep, therefore, more solid forms, sending forth blossoms capable of sustaining the action of such an element, were requisite: and therefore God, who gifted his creature man with an inquiring spirit, and with an appetite for knowledge of the works of creation, to furnish him with objects for inquiry, and to gratify that appetite to the utmost, not only placed before his eyes upon the earth an innumerable host of creatures, of which he could gain a notion by only opening his eyes and by observing their beauties, and experiencing their utility, might praise his Maker for them; but also filled the deep with inhabitants, and ornamented it with animals that appeared to vegetate and blossom like plants, that his curiosity being excited, he might also study the inhabitants of the water, and glorify his Maker for the creation of them also.

But we may derive another use from the consideration of these plant-like animals, if the sceptic endeavours to persuade us, from the gradual progress, observable in natural objects from low to high, and from the narrow interval that often separates those in the same series from each other, that by the action of certain physical causes, consequent upon established laws and a fixed order of things, and by the stimulus of certain appetencies in themselves, animals gradually changed their forms and organization, and thus, by slow degrees, kept improving in all respects, till at last the monkey became the man, we may turn round upon him, and ask him, how it was that the zoophyte, buried in the depths of the ocean, should imitate the plant? Can a studied imitation every where denoting purpose and design, a mighty structure including innumerable forms and parts connected with each other and formed evidently according to a preconceived plan, be the result of the operation of blind, unguided physical agents, acting by the appetencies of these organized beings? How indeed could they have any appetency to put on the appearance of a set of objects they never saw? The thing is morally impossible. In fact, when we survey the whole series of natural objects, and find throughout a system of representation, as well as a chain of affinities, it is as clear as the light of day, that an infinite Intelligence must first have planned, an Almighty hand then executed, and that infinite Love still sustains the whole.

Book review of *Biology – A Traditional Catholic Perspective*

(Pamela Acker, Kellan Loew, Anne Kraft & Dean Loew,
Christ the King Books, 2021).

Professor Maciej Giertych

This new biology textbook is easy to read and deserves to be recommended for Catholic schools and home schooling. The book has frequent references to God and religion, unabashedly. This is something new in biological teaching.

It starts by defining what is biology, the study of life, natural life, as distinct from supernatural life which is the subject of theology. It is pointed out that plants and animals share some functions with us but not all. We can do many things that animals cannot do: reason through a problem, learn the causes of something, define what something is, enjoy music, distinguish between good and evil actions, and we **can communicate abstract ideas to each other** (such as love, happiness, freedom) by speech and writing. We assign all these functions to our souls. Animals also have souls but only material ones which cease to exist on death. We humans have immaterial and therefore immortal souls that continue to exist after our bodies die. The man's (separated) soul is then immediately judged by God and goes to its eternal reward or punishment. Fancy seeing such comments in a biology text!

It is characteristic of living things that they reproduce, have the power to produce offspring, take in food, and grow into a body like the original one.

Thus "living things" can be divided into "immaterial living things", "angels" and "material living things", "plants" and "animals" among the latter with a distinction between "beasts" and "men" (rational animals). Animals have all the functions of plants plus the power of sensation and locomotion, while men have all the powers of animals plus the ability to reason from which derives the power of free will.

All living organisms have organs, albeit only organelles in microorganisms. Biology is the study of the functioning of those organs, of their cooperation – alone they are nothing.

Chemistry alone cannot explain the wonders of biology. It is interaction of inorganic things such as elements and compounds, their joining or separating. But a compilation of the right proportions of elements and compounds will not give life. Living things beyond being composed of chemicals are capable of sensing.

All living things have a soul, an internal principle which makes an organic body live, develop, and engage in activities such as growing, moving, sensing

– and in man knowing. Plants have a vegetative soul, animals a sensitive soul and humans a rational soul. This soul is immortal in man but mortal in plants and animals. The immortality of the human soul can be derived by reason alone, as Aristotle did. Today we also claim this from faith revealed by God.

Living things have order, and this order does not simply happen. It was introduced into matter by a supreme principle.

In teaching biology it used to be that at the start observable life of higher animals and humans is discussed (how they find food, develop, reproduce etc.) and only then anatomy and things explained by chemical details (from simple observations to more complicated ones). Today biology textbooks start with chemical details of which we have no practical experience at all, and claim that from simple compounds life began and evolved all the way to humans (all of this based on faith in what the teacher says and not observable knowledge).

The present book returns to the old sequence. It starts by describing various behaviours and even emotions of animals comparing them to those of men. They may have better sight, hearing or smell than humans but they cannot reason as humans. They have instincts, and experience sensations, but they do not have comparable intelligence.

However these instincts are worth studying. I expected to bypass reading about the biology itself, known to me from other textbooks, yet I had to continue reading about the fascinating observations of Jean Henri Fabre [1823-1915] on the way in which a wasp paralyses a cricket (necessarily a female cricket) to turn into a living pantry for its own offspring (larvae). It was like reading a detective story. The wasp would make a hole in the ground, paralyse a prey, bring it to the hole, deposit an egg on it and close the hole. When Fabre interrupted the process by removing the prey from the hole, the wasp would still close the empty, useless, hole – for no reason. Bare instinct is quite unable to adapt the behaviour to the new circumstances.

The textbook goes on to describe the functioning of the five senses in man and animals without going into anatomical details. There is much variety in the scope achievable. There are also senses we do not have, such as echolocation in bats or sensing magnetism.

Next the book deals with human biology. It starts by pointing out that there are cells in our body which form tissues which form organs and which form systems. There are 12 systems in the human body, digestive, nervous, skeletal, etc. All are interconnected.

Then follows in the book a detailed description of the anatomy and functions of these systems in man. Only the reproductive system is left out – leaving this to be explained to students by their parents. In this way the book avoids becoming pornographic. Reproduction is later described in animals, but

mating is only mentioned, not described. The topic of fertilization is left till descriptions of plant reproduction and particularly of microorganisms. In fact the notion that male and female gametes fuse to form a single cell called the zygote is introduced as late as p. 468 in the book. On p. 544 it is pointed out that “conception ought to remain between a child’s married parents; gametes may not be fertilized in a test tube (as is common in genetic manipulations) and especially not with the use of ‘donor’ cells from other individuals”. The book warns that not all sources speak appropriately about reproduction (p. 473).

Then the book goes on to describe animal physiology, pointing out how much it is alike and how it differs from the human. There is much variety and the cooperation of systems is always so organized that life is efficient. God has made it so for all kinds of creatures.

When discussing taxonomy, the book stresses the principle of “like begets like” which is in opposition to evolution which presupposes that two or more types of organisms have a common ancestor. The book rejects all taxonomic suggestions based on the theory of evolution. It does not treat man as a kind of animal (vertebrate, mammal, primate etc.) but as something quite different – a rational being.

Then the book describes different types of animals stressing the different adaptations they have to their way of life. I thought I would skip reading about the different animals but the account proved so interesting that I had to read it. In fact the whole book is written in a very interesting manner – like a detective story.

Next comes the description of plants with their vegetative soul, their biological functions. Difficult processes, such as osmosis, are described by comparison with well known phenomena, such as the swelling of raisins in liquid. The upward movement of water in plants, from root to stem and leaves, can be compared to the movement of water up a piece of paper with one end dipped in water. All along such comparisons make comprehension of processes easy.

Plants store food for their own needs, in root, stem or fruit, but by God’s providence this stored plant food is also available to herbivorous animals and man.

Plants and animals have potentials it is the purpose of science to discover and exploit. It is not for science to try and counter these potentials.

When discussing ecology the book points out that predation and competition among organisms is a natural phenomenon checking the number of individuals of any species, which unchecked would have destroyed the environment by its numbers. Things are so planned by God. Dead things

decompose and are eaten by scavengers, otherwise we would be buried in masses of dead carcasses. Decomposition is an important part of ecology.

In discussing decomposition the book points out that what appears and was sometimes described as natural generation of new organisms on dead or dying bodies is in fact the result of microscopic spores of moulds setting on the decaying body to grow on the carcass and decompose it. Again we have the principle of “like begets like”, nothing new develops.

When describing the carbon cycle the book explains the “greenhouse effect”. Sun rays reflect from the earth surface (as from the moon) and some of this reflected energy is stopped by carbon dioxide in the atmosphere, and sent back to earth, keeping it warm thereby. Otherwise it would be uninhabitable, cold. We should not fear the “greenhouse effect”. Excess CO₂ will be consumed by more photosynthesis. Increased CO₂ emission by industrialization has not caused significant temperature rise. The book deflates the political agenda of “global warming”.

When discussing various biomes it is pointed out that a balance exists between the various organisms living there. God has made it so. Our interventions, like eliminating the wolf, can negatively destroy this balance by allowing for an excessive increase of species wolves prey on. We must respect the natural balance.

When discussing the cell the authors point out that cells come from cells, like begets like. There is no spontaneous formation of cells, they come by reproduction from other cells, by duplication. All life consists of cells. A cell is living. Alone a part of a cell is not life. Some organisms are unicellular, but others are composed of many cells. There is another form of living, the composition of various cells into a larger organism. Such cells have two lives, that of their own and that of the organism they are part of.

Cells develop from totipotent ones (the zygote) to pluripotent, multipotent, progenitor and precursor cells till those that only multiply without changing its kind. The book underlines that in research on human cells (stem cell lines) it is possible to obtain multipotent cells from the blood of the umbilical cord (after birth), and derivative ones from blood or bone marrow, but totipotent and pluripotent cells can only be obtained from embryos, that it is from aborted fetuses, which is morally inadmissible.

The discussion of viruses, their mode of reproduction and mode of achieving immunity from them is very relevant to our current Covid 19 crisis. It also points out how use in research of cell lines from aborted fetuses disqualifies morally some of the vaccines produced.

Genes mutate with time. It is pointed out that only 0.002-0.006% are actually altered in the Y chromosome (inherited from the father) which

considering the rate at which the changes take place would require not more than 10 000 years, indicating a young world from the time of the first man (Adam). Similarly mitochondrial DNA (inherited only from the mother) altered only so much from the time of Eve that 6000 years would suffice.

People with three chromosomes of a pair instead of two (trisomy), are usually unlikely to live long; they should be baptized soon after birth. Those with three chromosomes no. 21 have Down's syndrome.

Chromosomes are made up of DNA a substance composed of four nucleotides, the sequence of which contains information (like sequence of letters in a text). For the sequence to make sense intelligence is needed. The sequence of nucleotides in DNA comes from Divine Intelligence, it is not random. This same code in DNA operates in all organisms, from man to bacteria.

A description of how DNA functions and reproduces, how it determines the structure of proteins, how proper fragments of DNA are used at appropriate times etc, leads to the conviction that living things have a soul, an immaterial component that determines life, what lives and what is dead, what can repair itself and what cannot. Additionally humans have a rational soul that makes them special in nature. Now that we have learned how to manipulate the genetics of plants and animals (GMO's)¹ it is pointed out that this should not be applied to humans. We should not meddle with the plan God has for each of us when genes of our parents combine.

The last part of the book deals with the question of evolution. It becomes more philosophical. The actual topic of evolution is described following the "Foundations Restored" series of the Kolbe Center for the Study of Creation.

Darwin postulated "natural selection" as the agent that promotes evolution. He claimed that "varieties" (as obtained in breeding – artificial selection) can become new species by favouring some features and discarding others. This as we now know involves the restriction of variability to some homologous traits by abandoning heterozygosis for them. As the book rightly points out formation of varieties, races, involves loss of genetic material and not generation of new. Evolution would require new information. Restricting himself to discussion of species (actually varieties) Darwin avoids the question of how differences between phyla and other kingdoms could have occurred. Now we know about mutations to DNA and they have been credited with generating new information. However experience demonstrated that mutations are injurious, they are random incidents and as such they destroy existing order (by the law of entropy).

¹ GMO = genetically modified organism

Darwin postulated that we shall find the missing links in the fossil record. This has not happened. In fact there is a significant scarcity of intermediate forms among the fossils and they do not arrange in sequences needed for evolution. This lack of fossil evidence was explained away by “punctuated equilibrium”, a notion that evolution occurs rarely but fast in restricted areas, in bursts, as a consequence of some mutagenic factor (such as sudden solar radiation), thus it is hardly surprising that we have seen none in the last 150 years. There is of course no proof for this.

Homology is defined as *similarity in structure due to a shared common ancestor* and then used as evidence that similar structures prove evolution (circular reasoning). When similar structures appear in distant organism (as a eye in man and octopus) it is explained away not by homology but by “convergent evolution”, in order to perform the same function. Many difficult instances were reclassified from homology to convergent evolution. Of course there is no evidence for this. DNA analysis has not confirmed similarity of genes responsible for homologies.

It is pointed out that evolution presupposes changes bringing new useful genes, while we observe the spoiling of genes by mutations from an originally perfect state. No example of a positive evolution has ever been demonstrated. Thus the adaptation of Catholic theology to the theory of evolution (the notion that evolution occurred under God’s guidance – theistic evolution) is pointless.

It leads to such deformities as “social Darwinism” and “eugenics”, the glorification of such ideas as “survival of the fittest” that involves the discarding of less successful humans. The last chapter disqualifies evolution as an explanation of the origin of life forms. Science conforms much better with the notion of special creation of perfect forms that now deteriorate as a consequence of the Fall.

I strongly recommend the book for the teaching of biology!

[Finally one word of criticism. The text usually has measures in inches and °F while drawings in cm and °C. Consistency would help.]

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The book is available from the Kolbe Center at \$68.95, and there are also supporting materials listed:

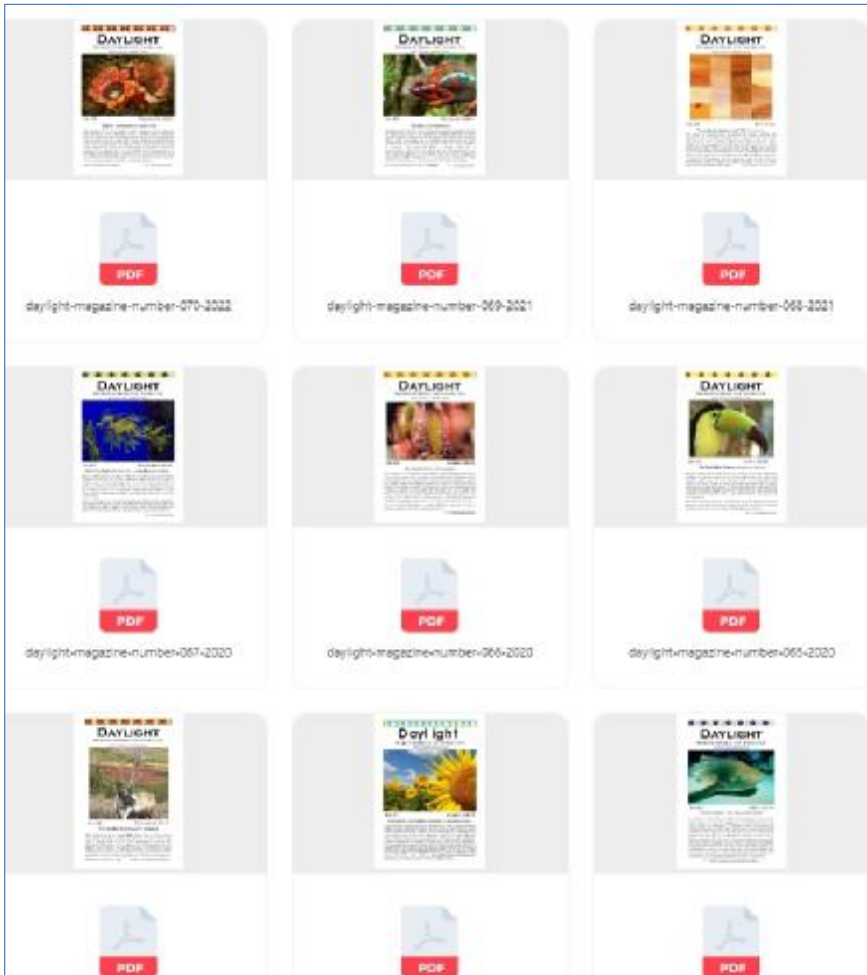
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The Silk Moth—*Bombyx mori*

The famous ‘Silk Road’ [or route] was active from the second century BC until the mid 15th century and spanned some 4000 miles between East and West. It facilitated economic, cultural, political and religious interactions between China, Asia, East Africa and Europe. Its name arose from the highly lucrative production of silk in China, though it also enabled trade in other commodities such as tea, dyes, porcelain, paper and gunpowder, while the West exported horses, camels, honey, wine and gold. Silk itself comes from the cocoon of the silk-worm.



Silk threads are produced by a number of insects and spiders for spinning webs or traps and for making cocoons. It is a natural protein fibre mainly composed of fibroin. Silk is mainly produced by the larvae of insects undergoing complete metamorphosis.

“When the caterpillar is about to make its cocoon, it begins by a number of rather strong threads attached to different points, and making a sort of scaffolding, so to speak, for the cocoon itself. Upon these is spun a slight outer cocoon of very loose and vague texture—the “floss silk” of commerce, and within that is the cocoon proper, in which the insect lies enclosed. It will be seen, therefore, that there are really three cocoons, one within the other, namely, the scaffold cocoon, the floss cocoon, and the silk cocoon itself, so that the inmate is protected from variations of temperature.”¹

The physical input for the material of the silk comes mainly from the commercial culture (‘sericulture’) of silkworms fed on the leaves of the mulberry tree. This textile industry in China may date back thousands of years and involves weaving and dyeing techniques. Despite their efforts to keep their methods secret, by the second century AD, Korea and India had developed in silk textile production. Over centu-



ries, Mediterranean and European countries took up silk production; James I planted 100,000 mulberry trees in England, but apparently of an unsuitable species for the silk worms’ tastes! There were a few successful projects in Britain and this writer well remembers visiting the ‘Lullingstone’ silk farm after it moved from Kent to Ayot St Lawrence, Herts, back in the 1950s.

Thank God for those amazing little silk worms!

¹ Wood, J.G., *Nature’s Teachings*, William Glaisher (1907), p. 179